REMARKS/ARGUMENTS

Prior to this Amendment, claims 1-6 and 16-20 were pending in the application.

Claims 1 and 16 are amended to address claim objections due to informalities and to clarify the claimed subject matter relative to the cited references. Claim 1 is further amended to clarify that all the line segments of the alignment line indicators are "disposed on the mounting surface" to assists in visible alignment. Claim 17 is amended to provide proper antecedent basis, and claim 20 is amended to correct a typographical error and to further clarify its language.

After entry of the Amendment, claims 1-6 and 16-20 remain for consideration by the Examiner.

Claim Objections

In the March 26, 2007 Office Action, the Examiner objected to claims 1-5 due to informalities in claim 1 and objected to claims 16-20 due to informalities in claim 16. Claims 1 and 16 have been amended to address these objections.

Claim Rejections Under 35 U.S.C. §112

In the March 26, 2007 Office Action, the Examiner rejected claims 1-6 under 35 U.S.C. §112, second paragraph, as being indefinite due to use of "a first lateral distance" more than once in claim 1. Claim 1 has been amended to address this issue.

Claim Rejections Under 35 U.S.C. §102

In the March 26, 2007 Office Action, the Examiner maintained the rejection of claims 1-6 under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. Appl. Publ. No. 2002/0050397 ("Sakamoto"). This rejection is traversed based on the following remarks.

Prior to this Office Action, several Office Actions have been issued, the Applicant has responded to these Office Actions, and Applicant has filed an Appeal Brief. Prosecution was re-opened, but no new art has been cited by the Examiner. The following discussion includes a restatement of many of the arguments previously provided because they are believed still relevant to the claim rejections. However, Applicant begins with a discussion specific to what appears to be an important disagreement in understanding of the language of the pending claims and the teaching of Sakamoto.

Claim 1 is amended to clarify that the component-dedicated alignment line indicators are "visibly disposed on the mounting surface for visibly aligning the disk drive electrical component on the mounting surface." As written, this claim limitation requires that the line indicators are "on the mounting surface" and are useful for visibly aligning a component on that same surface. Hence, indicators or line segments that are not on the mounting surface of a circuit board cannot teach or suggest such indicators. The claim further calls for first to fourth inner line segments and then also for first and second outer line segments outside a pair of the inner segments. All of these segments must be disposed "on the mounting surface" according to the language of claim 1, with an example implementation shown in Figure 4 of Applicant's specification.

In contrast, throughout prosecution, the Examiner has failed to show a single reference that includes any line segments on the mounting surface. Instead, Sakamoto has been used to try to anticipate the language of claim 1, and this reference only shows a circuit board having a mounting surface with a recessed surface through which a cooling passageway has been cut (see Figures 1A and 2A of Sakamoto). With reference to Sakamoto at Figures 1A and 1B, the edges of a radiation substrate 13A that is mounted on the opposite side as the electric component 10 are cited by the Examiner as showing the outer line segments called for in claim 1, but an edge of a substrate mounted on an opposite surface (let alone

on the same surface) cannot be argued to be "**disposed on** the mounting surface." Additionally, radiation substrate 13A is mounted onto the component 10 as part of the assembly process and is not available for performing visible alignment of component 10 on sheet 11.

Further, claim 1 calls for four inner line segments to be disposed on the mounting surface. Sakamoto is cited for showing these 4 line segments on the surface 11 with the edges of the "hole" or heat passageway 13. Applicant asserts now (and has asserted in prior Amendments when the Examiner had been citing recessed surface OP as showing the outer line segments) that **edges of a hole or recessed surface are not visibly disposed line indicators** (i.e., Applicant asserts that there are no line segments shown disposed on either side or surface of sheet 11 of Sakamoto as shown at least in Fig. 1A or Fig. 2A).

Further, applying common sense, the hole 13 may not be used to visibly align item 10 because during assembly it would be hidden by item 10 as soon as item 10 is placed on or near the surface of sheet 11.

Further, claim 1 calls for the inner line segments to be spaced apart such that opposing pairs are spaced apart at least as much as the first and second lateral distances of the perimeter, which is defined by the electrical component. The Examiner asserts that item 10 in Sakamoto defines the perimeter called for in claim 1 but then states that edges of a hole 13 provide the inner line segments. It is clear from Figure 1A that the hole 13 is much smaller than item 10, i.e., the perimeter of the hole 13 is much smaller than the perimeter of the base of item 10. Hence, even if Examiner were correct that edges of a recessed surface or hole can be construed as showing lines disposed on a surface (which Applicant does not accept), the hole must meet all the requirements or limitations for the line segments of claim 1 including that they be spaced apart by the distances specified (at least the first and second lateral distances). Applicant believes that the Examiner has misunderstood the first and second lateral distances requirement of claim 1

because in the Examiner-provided Fig. 1* **the first and second lateral distances are shown to be quite a bit smaller than would be the case if the component 10 were used to define the perimeter** (as indicated by the Examiner in the Office Action in para. 6.1). Specifically, in Fig. 1*, the lateral distances are shown by the Examiner to be within hole 13 or within the portion of Sakamoto's device cited for teaching the inner line segments when by the language of claim 1 this cannot be the case because claim 1 states, for example, "at least the first lateral distance" when describing the first inner spacing between the first and second inner line segments. For these reasons, Sakamoto fails to teach this additional limitation of claim 1, and Applicant requests that the rejection be withdrawn.

The following discussion provides additional specific reasons for withdrawing the rejection of claim 1 as was provided in previous submittals. In the prior Amendments and Appeal Brief, it was noted that Sakamoto does not teach or discuss alignment of electrical components on a printed circuit board. Instead, Sakamoto discusses a method for better controlling the temperature of a semiconductor module on a flexible sheet of a disk drive. This is a very different problem than that addressed by Applicant, and Sakamoto does not discuss accurate aligning but teaches instead enhanced heat dissipation. To dissipate heat in a better manner, Sakamoto shows in Figures 1A, 1B, 2A, 2B, and 2C a flexible sheet 11 made up of two insulating sheets P1 and P2 between which pad electrodes PD are sandwiched. A first opening OP is cut in the sheet P2 to expose the pads PD and a hole 13 is cut through both sheets P1 and P2 (i.e., nothing is disposed upon the surface of sheet 11 but instead material is cut from it to form OP and then material is cut from this recessed surface OP to form the hole 13). A semiconductor module 10, which is necessarily larger in perimeter than the hole 13, is mounted on the flexible sheet 11 with a portion contacting the pads PD and a portion extending through the hole 13 to mate with a radiation substrate 13A.

After this initial discussion as to the teaching of Sakamoto, a prior Amendment presented specific elements and claim language of claim 1 that are not shown or even suggested by Sakamoto. However, the Response to Arguments presented on page 2 of the June 30, 2006 Office Action only addresses the introductory or background portion of Applicant's remarks and does not rebut Applicant's specific arguments that several claim limitations are not shown by Sakamoto. Specifically, the Examiner stated in his response that "accuracy" is discussed as being important in the background of Sakamoto and then argued that the Sakamoto structures are "capable of performing the intended use" so the structure meets the claim limitations. However, the Applicant in a prior Amendment made it clear that Sakamoto fails to teach at least some of the limitations of claim 1 (with anticipation requiring a showing of each and every limitation). The Examiner is requested to withdraw the rejections based on Sakamoto or to provide a specific rebuttal of each of the prior and following arguments.

Claim 1 calls for "component-dedicated alignment indicators" disposed on the mounting surface of a circuit board body. Sakamoto fails to teach any "indicators visibly disposed on the mounting surface" as called for in claim 1. The Office Action cites Sakamoto in Fig. 1 and its "circuit board 11" as showing these indicators for use with component 10. However, as seen in Figures 1A, 1B and 2A, Sakamoto teaches a flexible sheet 11 that includes no visible indicators **on** its surface for aligning component 10. Instead, Sakamoto teaches that an opening OP is cut through its insulating sheet P2 and another opening 13 is cut through another insulating sheet P1. There are no alignment lines provided on the surface of sheet P2 but instead in Figure 1A it is shown that the component 10 is mounted to the surface of sheet P2 exterior to opening OP (e.g., see dashed lines indicating where component 10 would be mounted on the surface of sheet P2). As can be seen clearly in Figure 1A, there are no visible alignment line indicators provided on

flexible sheet 11. For this additional reason, claim 1 is believed allowable over Sakamoto.

To date, Applicant believes that the Examiner has not responded directly to this argument, but, instead, the Office Actions have simply restated and rephrased the rejection of claim 1. For example, the most recent Office Action of March 26, 2007 again provides a Fig. 1* that is basically Sakamoto's Figure 2A with dashed lines drawn in solid. Note, these lines are not lines that are actually disposed on a surface of sheet 11 but instead are lines provided by the Examiner in an attempt to find the limitations of claim 1. Fig. 1* of the Office Action is used to assert that the first and second outer line segments are shown by the dashed lines labeled as "13A" in Sakamoto's Figure 2A. Figure 2A is looking downward on sheet 11 after assembly or insertion of the component 10. The **dashed lines** labeled 13A correspond to the radiation substrate 13A" as described in paragraphs [0087] on in Sakamoto. In other words, the outer edge of substrate 13A is shown dashed in Figure 2A because **it is not visible** on the viewed side or surface of sheet 11 in Figure 2A. Hence, it cannot be argued to be "visibly disposed on the mounting surface" as called for in claim 1, and claim 1 is not anticipated by this reference.

Further, substrate 13A is used to cool the component 10 and cannot be construed to be two line segments used for alignment of the component it cools and which is mounted on an opposite surface of sheet 11. As shown in Figures 2A-2C of Sakamoto, this radiation substrate 13A is mounted on the flexible sheet 11 on the opposite side of the flexible sheet 11 relative to semiconductor device 10. Hence, the solid line shown in the Office Action's Fig. 1* is not actually present in any of Sakamoto's teaching as a line segment disposed on a mounting surface of sheet 11. The Examiner is respectfully requested to study Figs. 2B and 2C of Sakamoto because these two figures provide a side view that shows that substrate 13A is not on the mounting side of sheet 11 (i.e., on layer P2) and, therefore, does not include the four outer line segments as is apparently shown in the Examiner-

provided Fig. 1*. Further, Figs. 2B and 2C are worth studying because nothing is shown disposed on the surface of layer P2 (e.g., the mounting surface of sheet 11 as shown with element 10 mounted onto P2 in Fig. 2B). Because Sakamoto does not teach or suggest the line indicators including the first and second outer line segments, a rejection of claim 1 based on this reference is not supported and should be withdrawn.

Claims 2-6 depend from claim 1 and are believed allowable over Sakamoto at least for the reasons provided for allowing claim 1. Further, claim 3 calls for the line indicators to include a third outer line segment. The Office Action indicates that this third line segment is shown by another physical edge of the radiation substrate 13A. As discussed above, an edge of a substrate that is mounted onto a lower side of a sheet does not teach disposing a line segment on an upper side of the sheet (e.g., see Figure 2C of Sakamoto for the location of the substrate 13A relative to layer P2 of sheet 11 and of the component 10). Further, as shown in Figure 2C, the edge of substrate 13A (which the Examiner has provided a solid line for the dashed line shown in Figure 2A of Sakamoto) is actually spaced apart from the sheet 11 by the thickness of the substrate 13A (e.g., the visible edge of a component mounted on a surface is spaced apart from the surface and is not "disposed on the mounting surface"). For these additional reasons, claim 3 is not anticipated by Sakamoto. Claim 5 is believed allowable for a similar reason as claim 3 as it calls for third and fourth outer line segments (such as, but not limited to, the embodiment shown by Applicant's Figure 5).

Claim Rejections Under 35 U.S.C. §103

Additionally, in the March 26, 2007 Office Action, the Examiner rejected claims 16-20 under 35 U.S.C. §103(a) as being unpatentable over Sakamoto in view of U.S. Pat. No. 6,798,609 ("Bonin"). These rejections are traversed based on the following remarks.

Independent claim 16 includes limitations similar to claim 1, and the reasons provided for allowing claim 1 over Sakamoto are believed equally applicable to claim 16. Bonin fails to overcome the deficiencies of Sakamoto discussed with reference to claim 1, and it is only cited at page 9 of the Office Action for showing a "board body is a rigid board body" and not for showing line indicators on a mounting surface that are useful for alignment.

In addition to the reasons provided for allowing claim 1, claim 16 also calls for the inner line segments disposed upon the mounting surface to define a rectangle at least as large as the base of the electrical component. The Office Action shows in Examiner-provided Fig. 2* that the inner spacing is smaller than the edge of the component 10, and, as discussed relative to claim 1, Examiner provided Fig. 1* shows that the lateral distances are smaller than those of the hole 13. Hence, the Examiner is not referring to a rectangle at least as large as the base of the electrical components. For these reasons, claim 16 and claims 17-20, which depend from claim 16, are not shown or suggested by the combined teaching of the two cited references.

Conclusions

In view of all of the above, Applicant respectfully requests that the claim rejections be withdrawn in this case.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1419.

Respectfully submitted,

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